

WHAT IS CLAIMED IS:

1. A solid-state image sensor for outputting, from one line of a sensor array including an array of pixel photosensor cells or from one of a plurality of lines, which is selected in sequence from the sensor array including the array of the pixel photosensor cells, an optical signal and a noise signal from each of the pixel photosensor cells,

n optical signal common output lines and

n noise-signal common output lines (where n is a natural number greater than or equal to 2);

means for separately reading out the output optical signals and the noise signals at the n optical-signal common output lines and the n noise-signal common output lines; and

n differential output means for outputting differential signals between the optical signals and the noise signals output from the corresponding pixel photosensor cells, respectively, to which the optical-signal common output lines and the noise-signal common output lines are connected, the n differential output means including first differential output means and second differential output means,

wherein the n optical-signal common output lines and the n noise-signal common output lines are arranged parallel to each other, and, of the n optical-signal common output lines and the n noise-signal common output lines, a first

optical-signal common output line, a first noise-signal common output line, a second optical-signal common output line, and a second noise-signal common output line are arranged in the sequence of the first optical-signal common output line, the first noise-signal common output line, the second noise-signal common output line, and the second optical-signal common output line, and

wherein the first optical-signal common output line and the first noise-signal common output line are connected to the first differential output means, and the second optical-signal common output line and the second noise-signal common output line are connected to the second differential output means.

2. A solid-state image sensor according to Claim 1, wherein a shield line to which a fixed potential is supplied is arranged in a same layer as the optical signal common output lines and the n noise-signal common output lines, wherein, of the n optical-signal common output lines and the n noise-signal common output lines, the shield line is arranged between adjacent ones of the noise-signal common output lines, between adjacent ones of the optical-signal common output and the noise-signal common output lines, or outside of the n optical-signal common output lines and the n noise-signal common output lines.

3. A solid-state image sensor according to Claim 1, wherein n is 2, and a shield line to which a fixed potential is supplied is arranged in a same layer as the first optical-signal common output line, the first noise-signal common output line, the second optical-signal common output line, and the second noise-signal common output line, the shield line being arranged between the first noise-signal common output line and the second noise-signal common output line, between the first optical-signal common output line and the first noise-signal common output line, between the second noise-signal common output line and the second optical-signal common output line, or outside of the first optical-signal common output line and the second optical-signal common output line.

4. A solid-state image sensor according to Claim 1, wherein n is greater than or equal to 3, and an optical-signal common output line is arranged adjacent to at least one side of a section including the first optical-signal common output line, the first noise-signal common output line, the second noise-signal common output line, and the second optical-signal common output line, which are arranged in this sequence, and

the distance between the optical-signal common output

line arranged adjacent to the section and the first or second optical-signal common output line included in the section is greater than the distance between the optical-signal and the noise-signal common output lines included in the section.

5. A solid-state image sensor according to Claim 1, wherein read out timing of the optical signal and the noise signal at the first optical-signal common output line and the first noise-signal common output line connected to the first differential output means of the n differential output means is made to differ from that at the second optical-signal common output line and the second noise-signal common output line connected to the second differential output means adjacent to the first differential output means by shifting the phase between the first differential output means and the second differential output means.

6. A solid-state image sensor according to Claim 1, wherein the optical signal and the noise signal from each of the pixel photosensor cells of the selected line are held in an optical-signal holding capacitor and a noise-signal holding capacitor; and the optical signals and the noise signals associated with one row, which are held in the optical-signal holding capacitors and the noise-signal

holding capacitors, are separately read out, via a transfer switch, at the n optical-signal common output lines and the n noise signal common output lines, respectively.

7. A camera comprising a solid-state image sensor as set forth in Claim 1 and a processor that processes an image captured by the solid-state image sensor.

8. A camera control system comprising a solid-state image sensor as set forth in Claim 1 and a processor that processes an image captured by the solid-state image sensor.

9. A signal output device for outputting, from each of a plurality of signal sources, a first signal and a second signal that has a level lower than that of the first signal, comprising:

n first-signal common output lines and n second-signal common output lines (where n is a natural number greater than or equal to 2);

means for separately reading out first signals and second signals at the n first-signal common output lines and the n second-signal common output lines; and

n differential output means for outputting differential signals between the first signals and the second signals output from corresponding signal sources, respectively, to

which the first-signal common output lines and the second-signal common output lines are connected, the n differential output means including first differential output means and second differential output means,

wherein the n first-signal common output lines and the n second-signal common output lines are arranged parallel to each other, and, of the n first-signal common output lines and the n second-signal common output lines, at least four common output lines consisting of a first first-signal common output line, a first second-signal common output line, a second first-signal common output line, and a second second-signal common output line are arranged in the sequence: the first first-signal common output line, the first second-signal common output line, the second second-signal common output line, and the second first-signal common output line, and

wherein the first first-signal common output line and the first second-signal common output line are connected to the first differential output means, and the second first-signal common output line and the second second-signal common output line are connected to the second differential output means.

10. A method of outputting from each of a plurality of signals sources, a first signal and a second signal having a

level lower than a level of the first signal, comprising the steps of:

separately reading out the first signals and the second signals at n first-signal common output lines and n second-signal common output lines (where n is a natural number greater than or equal to 2); and

outputting differential signals between the first signals and the second signals output from the corresponding signal sources by n differential output means, respectively, to which the first-signal common output lines and the second-signal common output lines are connected, the differential output means including first differential output means and second differential output means,

wherein the n first-signal common output lines and the n second-signal common output lines are arranged parallel to each other, and, of the n first-signal common output lines and the n second-signal common output lines, at least four common output lines consisting of a first first-signal common output line, a first second-signal common output line, a second first-signal common output line, and a second second-signal common output line are arranged in the sequence: the first first-signal common output line, the first second-signal common output line, the second second-signal common output line, and the second first-signal common output line, and

wherein the first first-signal common output line and the first second-signal common output line are connected to the first differential output means, and the second first-signal common output line and the second second-signal common output line are connected to the second differential output means.